1995 Editorial Index

The following listing is a complete editorial index of the articles and departments, arranged by subject, that appeared in 1995. The month and page number of each are provided plus descriptions of feature articles.

Title	Month	Pg.
Automation and Controls		
Knowing the Basics of PLCs—Part 1 *Programmable logic controllers provide dependable, high-speed control and monitoring demanded by a wide variety of automated applications.*	Oct.	20
Servicing PLC 120V I/O Modules *Repairing all types of I/O modules, from fairly simple to quite complex, can be done with common tools and procedures.*	Nov.	24
Troubleshooting PLC Circuits by Testing Thumbwheel Switches *One component of a PLC control circuit is the thumbwheel switch; speedy testing of these devices will reduce downtime.*	Dec.	20
Business		
Controlling Project Costs *By following a risk-minimizing process, the design professional can control project costs.*	May	96
Anatomy of an Electrical Accident *Human error, poor maintenance, improper equipment design and lack of training add up to disaster for two men working with electrical equipment.*	June	32
Beware of Electrical Safety Hazards *Knowing the safety hazards of electrical construction can help reduce accidents and fatalities.*	June	37
Using Safety Equipment Safely *Proper use of safety equipment on energized and deenergized circuits will help reduce electrical accidents.*	June	90
Contractor Safety Plan Offers Multiple Rewards *Comprehensive electrical safety program reduces accidents, builds morale, increases productivity, and boosts the bottom line.*	Aug.	62
Energy Management Plan Slashes Power Bills at Bell Labs *Energy reduction techniques employed at the huge research and development center save $1.4 million per year.*	Nov.	33
Calculations and Design		
The Basics of Cable Pulling Calculations—Part 5	Jan.	58
Electrical Design with EMF in Mind *What are electromagnetic fields, and what efforts should be made to minimize them in designing electrical systems today?*	Feb.	64
The Basics of Calculating Transformer Currents	Feb.	96
Adding Central A/C to an Existing Dwelling Service *Can a central air-conditioner be added to existing service conductors without upgrading the elements of the service equipment?*	March	58
Determining Submersible Pump Cable Sizes *How are voltage drop calculations used in sizing submersible pump power cables?*	March	60
The Basics of Solid State Devices—Part 1	April	88
Using Demand Data to Analyze Load Additions *Can a new commercial or industrial load be added to existing service equipment without performing an extensive standard calculation?*	May	82
The Basics of Solid State Devices—Part 2	May	110
How to Perform Short-Circuit Calculations—Part 1 *Performing short-circuit calculations requires an understanding of various system components and their interaction.*	June	46
The Basics of Solid State Devices—Part 3	June	84
Protecting Life Safety Circuits in High Rise Buildings *Fire damage to emergency circuits in high rise buildings must be prevented. When combined with smoke and heat spread, such damage may result in far greater loss of life and destruction of property.*	July	29
When Service Protection Can Be Higher Than Ampacity—Part 1 *Protecting service-entrance conductors when there are motors and other loads.*	July	38
The Basics of Solid State Devices—Part 4	July	68
The Basics of Solid State Devices—Part 5	Aug.	70
Controlling Building Noise with Good Electrical Designs *How can building noise transmission be reduced and by what specific installation methods and designs?*	Sept.	108
The Basics of Solid State Devices—Part 6	Sept.	116
The Basics of Autotransformers	Oct.	82
The Basics of Transformers—Part 1	Nov.	95
Can "Cord and Plug" Be Used to Connect Mobile Generators?	Dec.	10
How to Perform Short-Circuit Calculations—Part 2	Dec.	36

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Performing short-circuit calculations requires an understanding of various system components and their interaction.		
The Basics of Transformers—Part 2	Dec.	74
Computers and Power Conditioning		
Transient Protection Slip-Ups—Part 2 *TVSS devices must be applied at various points of system distribution so as to reduce transient voltages to levels equal to or lower than respective equipment limits.*	Jan.	18
Power Quality and Good Housekeeping—Part 1 *Power quality can be negatively affected by such mundane factors as loose power connections.*	Feb.	14
Power Quality and Good Housekeeping—Part 2 *Just because nonlinear loads are present doesn't automatically mean they are the source of system problems.*	March	18
Specifying Power Conditioning Equipment *There are critical questions that must be asked before a specification can be put together for conditioning equipment purchase.*	April	20
Signal Reference Grids: Myths, Facts, Sensible Choices *Your choice of SRG depends on knowing what's legitimately true and patently false about grounding, bonding, and electrical noise mitigation.*	April	68
Troubleshooting for Electrical Noise—Part 1 *Knowing the types of electrical noise and how to measure them are important first steps in enhancing your ability to troubleshoot.*	May	20
Troubleshooting for Electrical Noise—Part 2 *A portable oscilloscope and keen troubleshooting instincts help solve an EMI problem.*	June	18
Understanding Sample Rate *What is sampling rate, and why is it important in the selection of test and measuring equipment?*	June	68
An Introduction to the Decibel *While modern test instruments can compute decibels for us, we should know what a decibel is and how to manually calculate gain or loss.*	July	18
Troubleshooting Signal Attenuation in a CCTV System *This case history shows how decibel knowledge, a handheld oscilloscope, and intuitive thinking can be used to solve a troublesome problem.*	Aug.	16
Providing Four Megs of Power to Protect Computers *Fast track design and construction, thorough testing, and adjustments as needed provide power assurance to client's data operations.*	Aug.	23
The Case of the Soon-To-Be Overloaded Neutral Conductor *Odd triplen harmonic currents and neutral overloading go hand-in-hand.*	Aug.	58
Conducting a Power Quality Site Analysis—Part 1 *This first part discusses the three types of disturbances, focusing on those mystery disturbances that don't correspond to identifiable power system conditions.*	Sept.	18
Conducting a Power Quality Site Analysis—Part 2 *Power quality activities include the interaction of a source energy supply with load use demands.*	Oct.	14
Effects of Harmonics on Power Systems—Part 1 *If not properly designed or rated, electrical equipment will often malfunction when harmonics are present in an electrical system.*	Oct.	33
Using the Right Meter for Power Quality Troubleshooting *When you're called in to troubleshoot a power quality complaint, what's the logical sequence for measurements, and what tools do you really need?*	Oct.	70
Conducting a Power Quality Site Analysis—Part 3 *There are three locations where you can determine the extent of harmonic interaction: the nonlinear load, the next upstream transformer, and the point of common coupling with the utility.*	Nov.	18
Testing Isolation Transformers for Attenuation *Measuring common-mode current, not voltage, will provide a real-world measure of isolation transformer attenuation.*	Dec.	16
Establishing an Electrostatic Discharge Control Program *What is electrostatic discharge, and how can it be controlled to prevent damage to micro electronic components?*	Dec.	72
Energy Cost and Management		
Understanding Variable Frequency Drives—Part 1 *Variable frequency drives save energy, slash electric bills, enhance equipment performance, are highly reliable, and are affordable. Here's how they work.*	Feb.	66
Understanding Variable Speed Drives—Part 2 *Three basic types of variable frequency drives offer certain advantages as well as disadvantages depending on your motor application. The new flux vector drive is also discussed.*	March	52
Understanding Variable Speed Drives—Part 3 *A thorough understanding of how to match the VFD to the driven load is the key to a successful application.*	April	52
Understanding Variable Speed Drives—Part 4 *Correct installation of variable frequency drives demands attention to vital factors such as location and environment, electrical connections grounding, supply voltage, and protective devices.*	May	78
Understanding Variable Speed Drives—Part 5 *A carefully organized start-up procedure assures better equipment operation and system reliability while greatly simplifying future troubleshooting.*	June	60
Understanding Variable Speed Drives—Part 6 *Here are basic guidelines revealing how to troubleshoot variable frequency drives and get them up and running fast.*	July	44
Multiple Generators Provide Power for Peak Shaving/Emergency Systems	Aug.	37

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Modular 4160V generators slash $1 million off annual electric bills and assure emergency power. Versatile monitoring, control, and PLC systems integrate for total building control.		
Equipment and Products		
Understanding Variable Frequency Drives—Part 1 *Variable frequency drives save energy, slash electric bills, enhance equipment performance, are highly reliable, and are affordable. Here's how they work.*	Feb.	66
Mobile Generators Power Up Newark Airport *Power outage stopped all operations at busy airport. Here's how teams of electrical firms supplied auxiliary power to critical facilities.*	Feb.	80
Understanding Modern Motors and Controllers *Included are the latest developments, fundamentals, NEC rules, standards, special features, and other important details on motors and controllers.*	March	28
Effectively Applying Premium Efficiency Motors *Major guidelines will help you understand, evaluate, select, apply, and properly load premium efficiency motors.*	March	43
Understanding Variable Speed Drives—Part 2 *Three basic types of variable frequency drives offer certain advantages as well as disadvantages depending on your motor application. The new flux vector drive is also discussed.*	March	52
Understanding Variable Speed Drives—Part 3 *A thorough understanding of how to match the VFD to the driven load is the key to a successful application.*	April	52
Understanding Variable Speed Drives—Part 4 *Correct installation of variable frequency drives demands attention to vital factors such as location and environment, electrical connections grounding, supply voltage, and protective devices.*	May	78
Think Like a GFCI *With ever increasing locations that need GFCI protection, knowing how to select, install, and test these devices is crucial.*	May	84
Understanding Variable Speed Drives—Part 5 *A carefully organized start-up procedure assures better equipment operation and system reliability while greatly simplifying future troubleshooting.*	June	60
Understanding Variable Speed Drives—Part 6 *Here are basic guidelines revealing how to troubleshoot variable frequency drives and get them up and running fast.*	July	44
Where Do Motor OLs Go?	Aug.	12
Using the Right Meter for Power Quality Troubleshooting *When you're called in to troubleshoot a power quality complaint, what's the logical sequence for measurements, and what tools do you really need?*	Oct.	70
Tamper-Resistant Receptacles: The Rules Have Changed *What tamper-resistant products are UL-lsited, and what test methods are used?*	Nov.	87
The Basics of Transformers—Part 1	Nov.	95
Can "Cord and Plug" Be Used to Connect Mobile Generators?	Dec.	10
Testing Isolation Transformers for Attenuation *Measuring common-mode current, not voltage, will provide a real-world measure of isolation transformer attenuation.*	Dec.	16
Answering Seven Common Questions on Generator and Motor Operation *Clarifying rotating equipment fundamentals will aid in electrical design and troubleshooting.*	Dec.	62
The Basics of Transformers—Part 2	Dec.	74
Facilities		
Protecting Life Safety Circuits in High Rise Buildings *Fire damage to emergency circuits in high rise buildings must be prevented. When combined with smoke and heat spread, such damage may result in far greater loss of life and destruction of property.*	July	29
Can Supports Be Welded to Conduits?	Sept.	12
Grounding		
Choosing Grounding Options for Electrical Power Systems *Your choice of either solid, low-, or high-resistance grounding is based on the power system application and degree of power interruption tolerated.*	Feb.	28
Ground-Fault Coordination Should Include MV Cable Shielding *Verification of shield performance under ground-fault conditions will prevent system-wide cable damage.*	Feb.	55
Signal Reference Grids: Myths, Facts, Sensible Choices *Your choice of SRG depends on knowing what's legitimately true and patently false about grounding, bonding, and electrical noise mitigation.*	April	68
Which Is Best: Parallel or Separate Ground Rods for "Isolated Ground?"	May	12
Grounding Non-Separately Derived Generator Systems *A long circuit length raises questions about fault-current return capabilities when a standby system, not separately derived, is running on its generator.*	May	106
Grounding Remote Pump Stations *Efforts to ensure continuity of power must not create potential hazards through improper grounding techniques.*	Aug.	66
Installation Methods		
Does Rigid Conduit Need Corrosion Protection When Installed in Earth?	Jan.	12
Using Integrated Wiring Systems for Power and Voice/Data Circuits	Jan.	40

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Can Service Entrance Equipment Be Installed in a Poor Environment?	Nov.	16
Lighting		
Applying Arena Lighting System Guidelines *Many lighting guidelines for large arenas can be applied to similar but smaller facilities.*	March	76
Applying HID Lamps to Emergency Lighting Circuits *Improvements in lamp design and the development of new accessory components for HID sources must be understood to be applied properly in emergency lighting systems.*	April	32
Effective Lighting for Automatic Transaction Units *Many factors must be considered, from effectiveness, safety, and environmental to review by planning authorities, when designing lighting systems for automatic transaction units.*	April	43
Using Lighting Software Programs *Are lighting application software programs useful for people who are not involved in lighting design full time?*	April	48
Lighting Controls: A New Technology? *Besides new lighting control products entering the marketplace, marketing efforts by these product manufacturers are on the rise.*	July	57
Service Protection Higher Than Ampacity—Part 2 *Lighting and appliance panels are protected differently than power panels.*	Sept.	100
Making Effective Lighting Retrofits—Part 1 *The correct intensity of light must be provided for the task being illuminated, without producing glare, when striving for operating cost reductions.*	Nov.	43
Maintenance		
Maintaining Outdoor Switchgear *Preventing the entrance of moisture and dust and periodic cleaning of outdoor switchgear components will help ensure reliable operation.*	Jan.	34
Sensible Transformer Maintenance—Part 2 *Following specific checking and maintenance guidelines as well as conducting routine inspections will help ensure the prolonged life and increased reliability of a dry-type transformer.*	Feb.	84
Can AC Coils Work in DC Circuits?	April	12
Testing for Power System Safety and Reliability *Heightened reliability and safety concerns have resulted in new maintenance programs and techniques.*	May	32
Outside Service Firms Team Up with Plant Maintenance Crew *Computerized scheduling guides service firms and plant electricians, achieving effective maintenance with practical economy.*	May	45
Troubleshooting Variable Speed Drives *Fast, effective troubleshooting combines intuitive and logical thinking with special training, the right test instruments, and "SMARTS."*	May	49
Proactive Power Monitoring Enhances Preventive Maintenance *How can power monitoring programs identify degrading trends in the electrical system so inspections and preventive maintenance can be carefully targeted?*	May	70
Sensible Transformer Maintenance—Part 3 *Correct interpretation of maintenance data from transformers is vital for increased reliability, long life, and advanced information on possible need of replacement.*	June	53
Using AC Coils on DC Power *You can use AC coils on DC circuits providing you apply enough DC voltage to draw the same amount of current as when operating on AC.*	July	50
Using and Maintaining Hydraulic Installation Tools *Because they are a valuable investment, hydraulic cutting and crimping tools should be used properly and maintained regularly.*	July	52
Detecting Moisture in Dry Type Transformers *Resistance testing verifies moisture presence; simple dryout methods eliminate the problem.*	Aug.	44
Maintaining Low Voltage Power Circuit Breakers *Regularly scheduled inspection and testing per these guidelines will help prevent power circuit breaker failures.*	Sept.	104
Preventive Maintenance of Motors and Controls *A well-planned preventive maintenance program is the key to dependable, long-life operation of motors and generators.*	Oct.	60
Servicing PLC 120V I/O Modules *Repairing all types of I/O modules, from fairly simple to quite complex, can be done with common tools and procedures.*	Nov.	24
Analyzing Transformer Insulating Fluid *As part of a complete preventive maintenance program, periodic oil analysis will monitor the condition of power transformers and detect problems before they reach serious proportions.*	Nov.	85
Testing Isolation Transformers for Attenuation *Measuring common-mode current, not voltage, will provide a real-world measure of isolation transformer attenuation.*	Dec.	16
Troubleshooting PLC Circuits by Testing Thumbwheel Switches *One component of a PLC control circuit is the*	Dec.	20

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thumbwheel switch; speedy testing of these devices will reduce downtime.		
National Electrical Code		
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Connecting an Appliance to an Existing Branch Circuit *Many Code rules are involved in potentially adding an appliance to an existing branch circuit.*	Jan.	38
Power-Limited Control, Signal Wiring and the NEC *Power-limited control and signal cables used in premises wiring have very specific NEC requirements as to listing, sizing, installation, and protection.*	Jan.	44
Industrial and Outdoor Taps *This last part of a four-part series on taps involving transformers covers industrial separately derived systems and a new rule on outdoor taps.*	Jan.	54
UL to Classify Fixture poles; PVC Color Code to Change; UL to List Hardware	Jan.	92
Quizzes on the Code/Hazardous Occupancies—Articles 510-516	Feb.	12
Sizing Manholes *A manhole must meet the applicable size requirements of its use; if that is as a pull box, then there are requirements that follow accordingly.*	Feb.	92
A National Electrical Installation Standard (NEIS)?; Plastic Boxes in Fire-Rated Walls	Feb.	132
Quizzes on the Code/Health Care Facilities—Article 517	March	14
Is Unobstructed Workspace Required at all Times? *Although switchgear must be readily accessible and meet minimum working clearances, the entire workspace need not be readily accessible.*	March	88
NFPA 99 Open for Comment	March	124
Quizzes on the Code/Theaters, Studios, Places of Assembly—Articles 518-540	April	18
Receptacle Configurations on Highly Loaded Circuits *There are circumstances when a plug and receptacle configuration can be used above the normal limit of 80% of their rating.*	April	82
Push-Wire Receptacles Limited	April	86
Difficult Vote Count on Zone Concept; 1996 NEC at NFPA Meeting	April	112
Quizzes on the Code/Mobile and Agricultural Occupancies—Article 545-555	May	18
Grounding Non-Separately Derived Generator Systems *A long circuit length raises questions about fault-current return capabilities when a standby system, not separately derived, is running on its generator.*	May	106
Thinner Type NM Cable Available; Twist-On Aluminum Wire Connectors; Fiberglass Conduit Permitted Indoors	May	152
Quizzes on the Code/Signs and Manufactured Wiring—Articles 600-605	June	14
Protecting High-Efficiency Motor Circuits *Some types of overcurrent protective devices may not prove suitable for all high-efficiency motor applications.*	June	74
NFPA Meeting Adopts 1996 NEC	June	116
Quizzes on the Code/Industrial Equipment—Articles 610-675	July	14
Service Protection Higher Than Ampacity—Part 1 *Protecting service entrance conductors when there are nmotors and other loads.* *July 38*		
Horsepower Designations on Appliances *Improperly substantiated horsepower designations on pool motors and other appliances may resize many circuit elements without increasing safety.*	July	64
Zone Concept Advances	July	92
Quizzes on the Code/Swimming Pools, Spas, and Fountains—Article 680	Aug.	14
Grounding Remote Pump Stations *Efforts to ensure continuity of power must not create potential hazards through improper grounding techniques.*	Aug.	66
1996 NEC Issued with Zone Concepts	Aug.	96
Standby and Parallel Systems—Articles 700, 701, 702, 705	Sept.	14
Illustrated Changes in the 1996 NE Code—Part 1 *A new NEC is on tap, with some of the most far-reaching changes ever made as we begin the next 100 years of the Code.*	Sept.	28
Service Protection Higher than Ampacity—Part 2 *Lighting and appliance panels are protected differently than power panels.*	Sept.	100
Council Acts on Complaints	Sept.	144
Medium Voltage (Over 600V)—Article 710	Oct.	12
Illustrated Changes in the 1996 NE Code—Part 2 *A new NEC is on tap, with some of the most far-reaching changes ever made as we begin the next 100 years of the Code. Part 2 of a 4-part series.*	Oct.	44
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Quizzes on the Code/Limited Energy—Articles 720, 725, 760, 770, 800, 810, 820	Nov.	14
Illustrated Changes in the 1996 NE Code—Part 3 *A new NEC is on tap, with some of the most far-reaching changes ever made as we begin the next 100 years of the Code. Part 3 of a 4-part series.*	Nov.	57
Tamper-Resistant Receptacles: The Rules Have Changed *What tamper-resistant products are UL-lsited, and what test methods are used?*	Nov.	87

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Quizzes on the Code/Tables, Examples, and Appendices—Chapter 9 and Appendix B	Dec.	12
Illustrated Changes in the 1996 NE Code—Part 4 *A new NEC is on tap, with some of the most far-reaching changes ever made as we begin the next 100 years of the Code. Part 4 of a 4-part series.*	Dec.	41
UL to Immediately List for Zones; NEC Appeals Denied; AL Nuts Still OK	Dec.	84
Power Distribution		
Industrial and Outdoor Taps *This last part of a four-part series on taps involving transformers covers industrial separately derived systems and a new rule on outdoor taps.*	Jan.	54
What to Know about Protective Relays *The successful operation of an MV distribution system depends on the proper selection and setting of switchgear relays.*	Feb.	37
Ground-Fault Coordination Should Include MV Cable Shielding *Verification of shield performance under ground-fault conditions will prevent system-wide cable damage.*	Feb.	55
Can Transformer High Leg and Neutral Be Used for 208V?; Can Transformers Be Operated at 130% of Capacity?	March	12
Tying New MV Feeders into an Existing System *Power feeders for a new cooling tower require special design and installation considerations to be compatible with the existing power distribution system.*	March	66
The Basics of 400-Hz Power Systems	March	96
How to Perform Short-Circuit Calculations—Part 1 *Performing short-circuit calculations requires an understanding of various system components and their interaction.*	June	46
To Get 120V on a 240V Delta System, Can I Use A Zig-Zag Transformer?	July	12
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Can Four 5kVA Buck-boost Transformers Supply a 20kVA Load?	Oct.	10
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Can "Cord and Plug" Be Used to Connect Mobile Generators?	Dec.	10
Upgrading a Plant Outdoor Substation *Photo story reveals design and construction details of a substation expansion that combines new 15kV equipment with existing 5kV systems.*	Dec.	30
How to Perform Short-Circuit Calculations—Part 2 *Performing short-circuit calculations requires an understanding of various system components and their interaction.*	Dec.	36
The Basics of Transformers—Part 2	Dec.	74
Teledata and Fiberoptics		
Voice/Data Rewiring for the Future *Design, installation, and administration of this existing office building's structured cabling system essentially follows telecommunications standards.*	Jan.	25
What's in the New TIA/EIA 568-A Standard? *Important revisions to the original TIA/EIA 568 standard may include new and previously issued TSBs, and maybe even a protocol for testing UTP horizontal subsystems.*	Feb.	74
D&B's New Worldwide Headquarters: A Case Study *The design and installation of new voice/data, premise, video, audio/visual, and information wiring systems required close coordination so that a tight construction schedule could be met.*	April	58
New Applications For Voice/Data Cabling Systems *Voice/data wiring schemes and media are ideally suited to many of the building-oriented control systems described by the Intelligent Buildings Institute.*	May	59
Field Terminating Fiberoptic Connectors without Epoxy or Polishing *Advancements in fiberoptic connectors now permit the field terminating of optical fiber cable without the use of adhesives or polishing procedures.*	May	67
Network Redesign Permits Intercommunication *Replacing a system having many proprietary protocols with one having a common protocol enables intercommunication.*	June	64
Implement a Disaster Recovery Plan for Telecom Systems *Since telecom/network wiring is becoming so prevalent in facilities, what can be done to prevent complete shutdown in case of a disaster?*	Aug.	48
New Developments in Patch Panel Technology *Three types of patch panels (wireless, electronic, and intelligent) have benefits and drawbacks, depending on the application.*	Aug.	52
Beware of Extended UTP Warranties *Differences in terminology and the absence of a 155 Mbps standard may cause problems.*	Oct.	80
Testing and Monitoring		
Is There a Test For Battery Life?	Feb.	10
Magnetic Amplifiers Versus VFDs; Why Do Incandescent Lamps "Tingle?"; "Testing For Battery Life"	June	12
Understanding Sample Rate *What is sampling rate, and why is it important in the selection of test and measuring equipment?*	June	68
An Introduction to the Decibel *While modern test instruments can compute decibels for us, we should know what a decibel is and how to manually calculate gain or loss.*	July	18